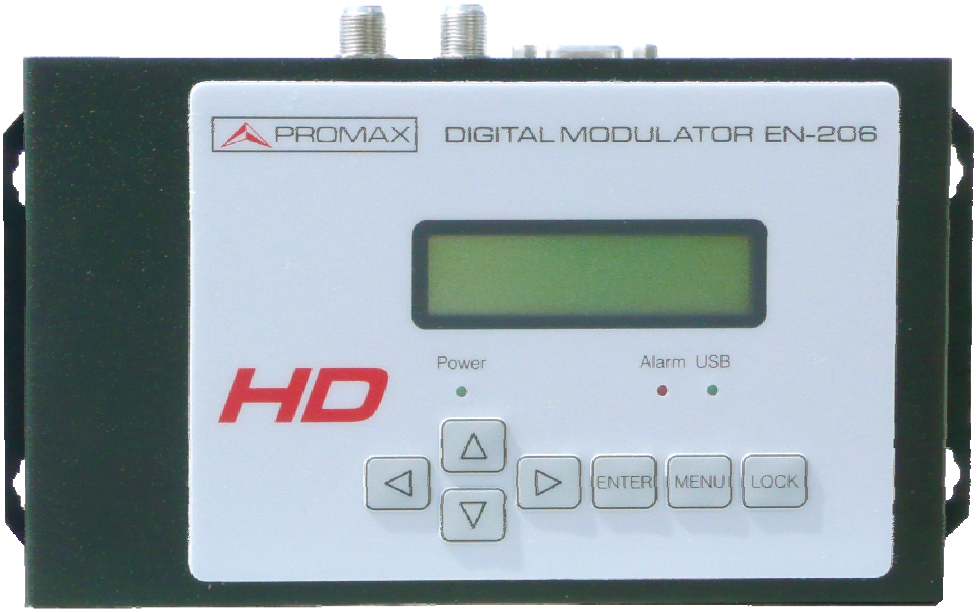
EN-206 I

HIGH DEFINITION ISDB-T MODULATOR



- 0 MI2067 -

PROMAX

SAFETY NOTES

Read the user's manual before using the equipment, mainly "**SAFETY RULES**" paragraph.

The symbol ⚠ on the equipment means "**SEE USER'S MANUAL**". In this manual June also appear as a Caution or Warning symbol.

WARNING AND CAUTION statements June appear in this manual to avoid injury hazard or damage to this product or other property.

USER'S MANUAL VERSION

Version	Date	Software Version
3.0	June 2015	3.1

SAFETY RULES ⚠

* **The safety could not be assured if the instructions for use are not closely followed**.

* When using some of the following accessories use **only** the **specified** ones to ensure safety.:

  External DC charger
  Power cord

* No use the external DC power cord this is damaged.

* Do not connect the external DC power until all cables are connected properly.

* In el manipulate external DC power supply.

* Observe all **specified ratings** both of supply and measurement.

* Remember that voltages higher than **70 V DC** or **33 V AC rms** are dangerous.

* Use this instrument under the **specified environmental conditions**.

* If the encoder modulator has been kept in cold conditions for a long time, keep it in a warm room minimum 2 hours before plugging into the mains.

* Mount the device in vertical position with the connectors located on the top side.

* **Do not obstruct the ventilation system of the instrument**.

* To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

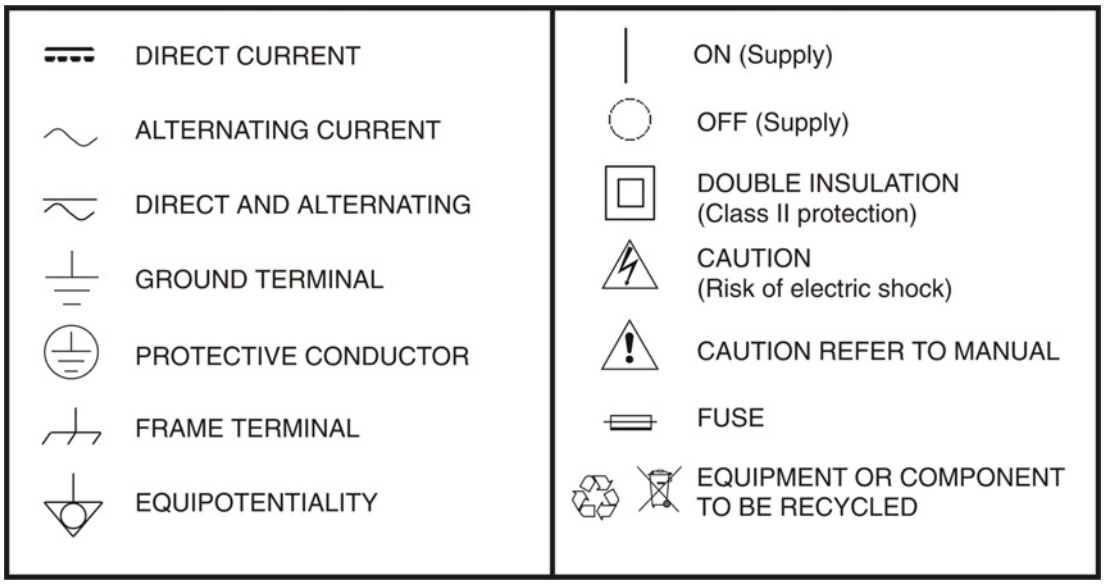
* Use for the signal inputs/outputs, appropriate low radiation cables.

* Follow the cleaning instructions described in the Maintenance paragraph.

* The operator is not allowed to intervene within the team: Any other change on the equipment should be carried out by qualified personnel.

* Mechanical handling / electric unit can cause damage. Do not connect the appliance to the mains before or during assembly.

* Symbols related with safety:



Descriptive Examples of Over-Voltage Categories

Cat I Low voltage installations isolated from the mains.

Cat II Portable domestic installations.

Cat III Fixed domestic installations.

Cat IV Industrial installations.

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HIGH DEFINITION ISDB-T MODULATOR
EN-206 I

1 INTRODUCTION

1.1 Description

The **EN-206 I** which allow audio/video signal input in TV distributions with applications in home entertainment, surveillance control, hotel Digital Signage, shops etc. It is an all-in-one device integrating MPEG4 AVC/H.264 encoding and ISDB-T modulating to convert input signals to ISDB-T RF out in the frequency range of 30~1000 MHz.

The USB port is designed to record encoded video (TS) and save it in ts files in the USB Keys or Hard Disks, and then the ts files can be playback through the USB port. The ts files can be also generated on a computer with TS Creator.exe program.

The signals source could be from satellite receivers, closed-circuit television cameras, blu-ray players, and antenna etc. its output signal is to be received by ISDB-T standard TVs or ISDB-T STBs etc.

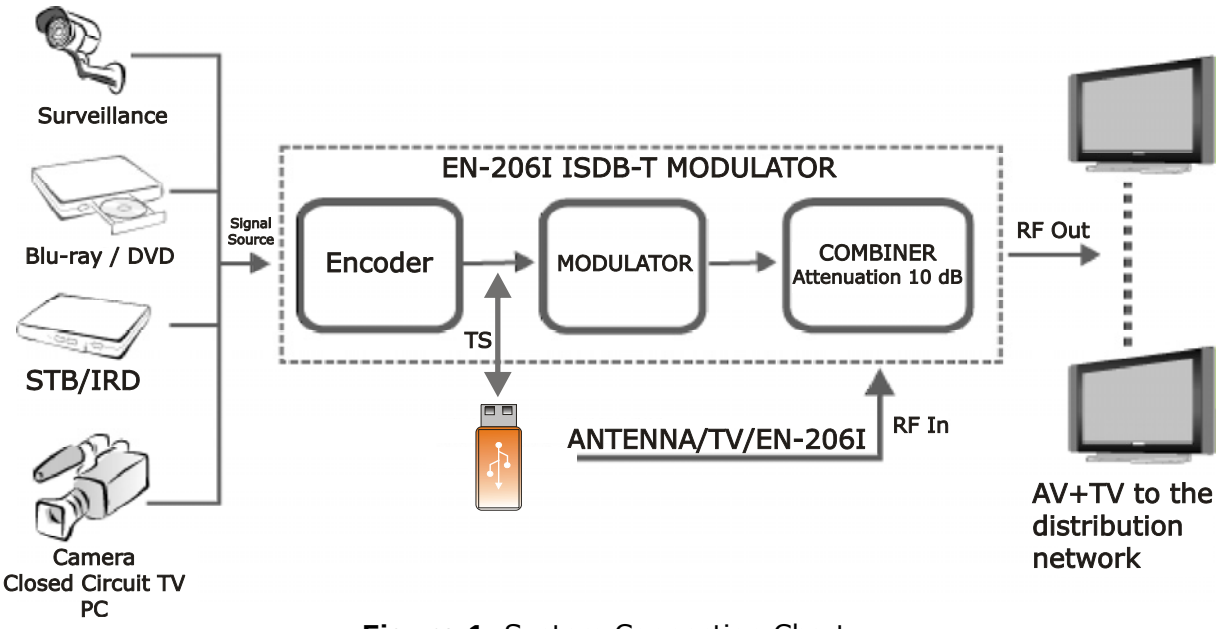


Figure 1. System Connection Chart.

1.2 Equipment Details

Front View

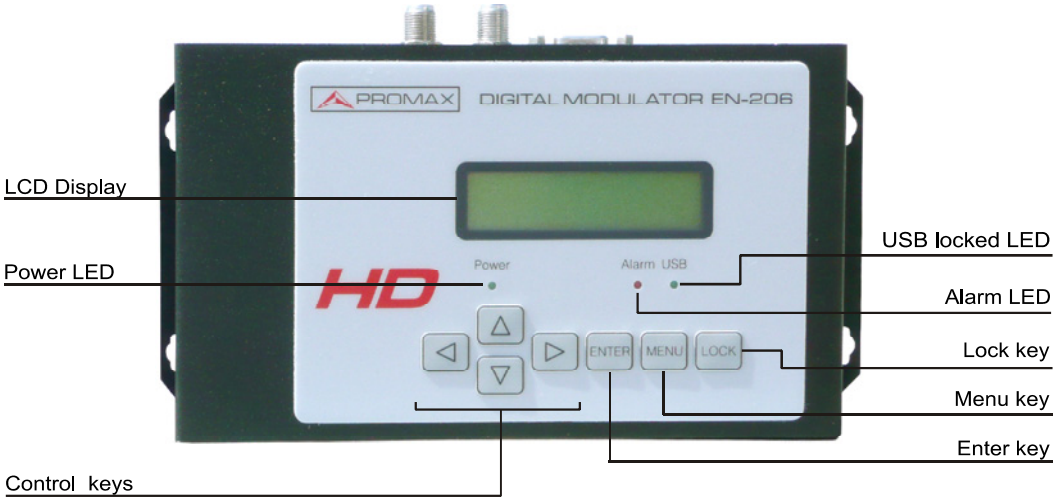


Figure 2.

Up View

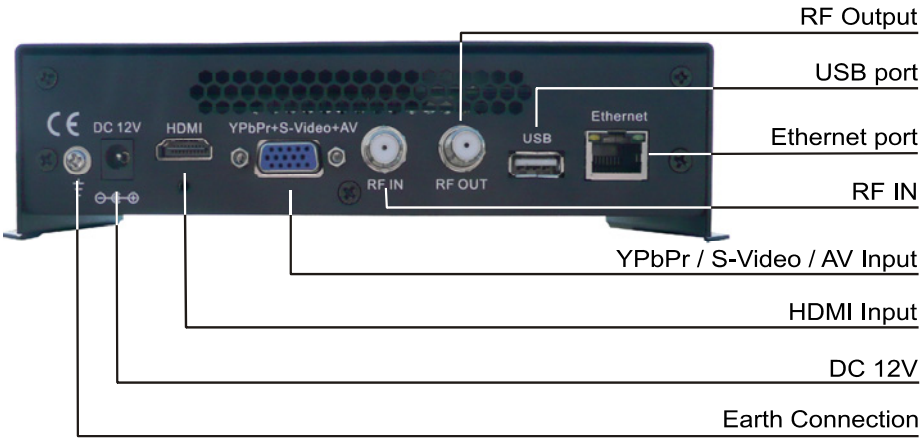


Figure 3.

- **Grounding**: To connect the earth cable.
- **DC 12V**: Power Input.
- **HDMI**: HDMI stream input supporting HD signals.
- **YPbPr + S-Video + AV**: YPbPr + S-Video + AV signal input through a VGA adapter cable.
- **RF in**: RF Loop-through input.
- **RF Output**: RF output to distribute modulated signal.
- **USB Port**: For video record, playback and system upgrade.
- **Ethernet Port**: For web-server management.

1.3 Installation

1. Mount and tighten the screws and plugs to secure the unit to the wall. Left 10 cm of free space around from each unit.

2. Connect the signal input in the respective connectors. The signal source can be from a surveillance monitor, DVD, set-top box, CCTV and etc.

3. Optionally, connect the loop-through RF input coaxial cable.

4. Connect cable to RF output to STB/TV.

5. Power supply connection: a) Connect the earth cable; b) Connect the power plug to the unit mains connector; c) Connect the power plug to the mains socket.

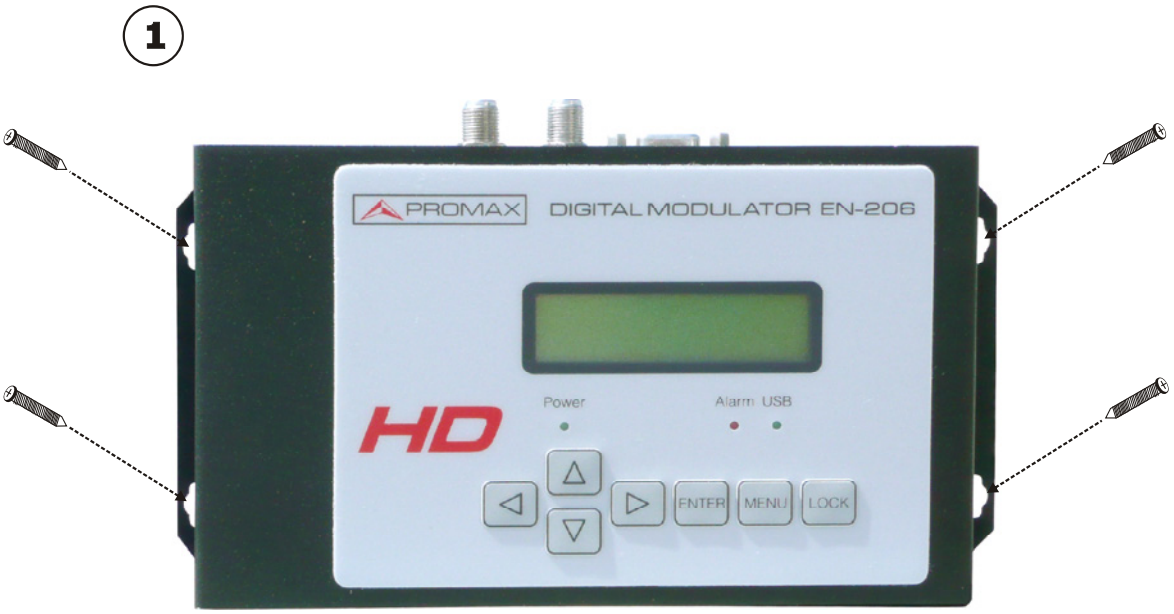


Figure 4.

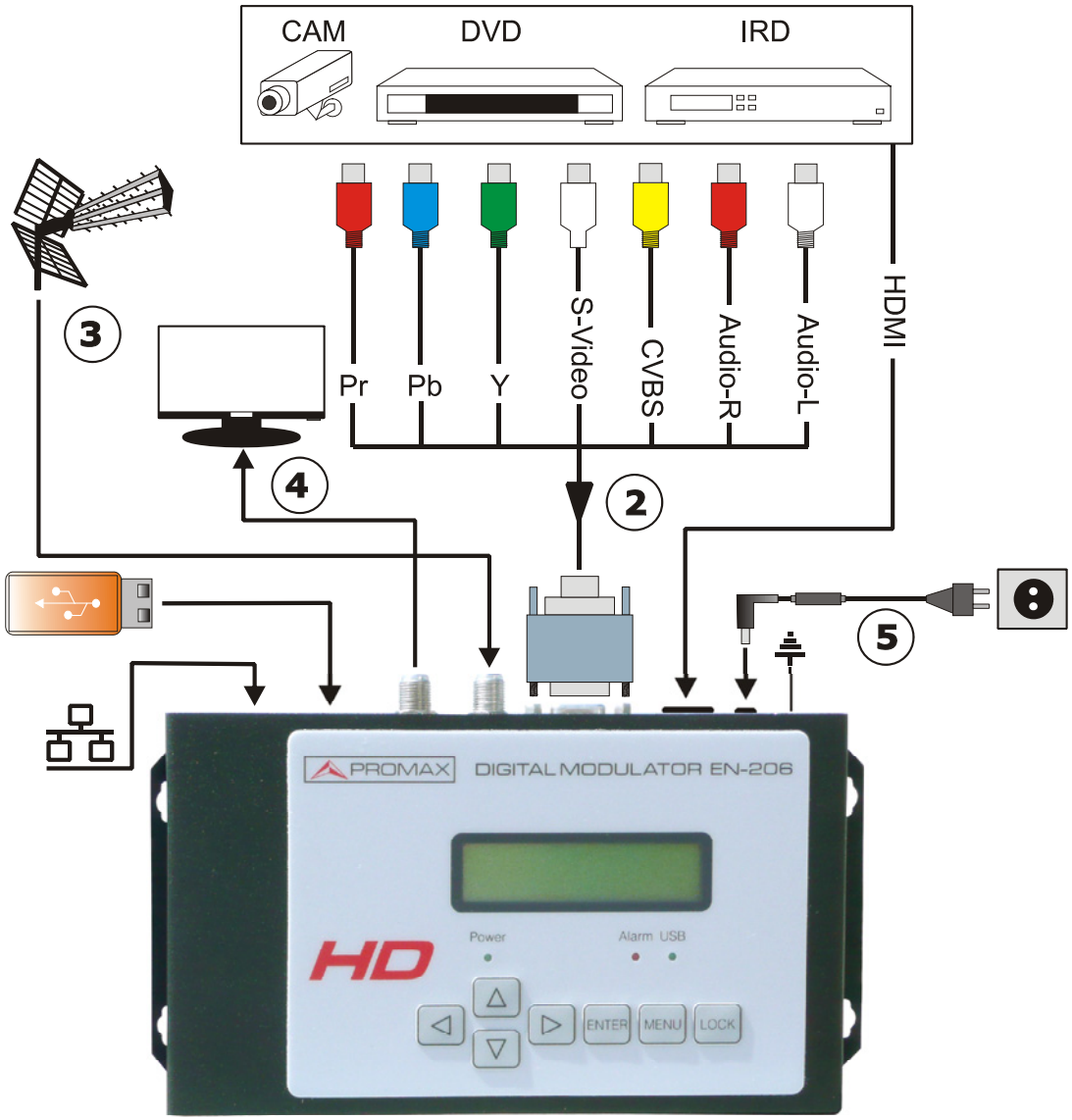

CAM
DVD
IRD
3
Pr
Pb
Y
S-Video
CVBS
Audio-R
Audio-L
HDMI
4
2
5
PROMAX
DIGITAL MODULATOR EN-206
HD
Power
Alarm USB
ENTER
MENU
LOCK

Figure 5.

1.4 Cascade Installation

The unit has 1 TV signal to RF output encoded as ISDB-T Digital TV signal.

Several units can be cascaded in order to increase the capacity. The maximum capacity of a series of N units is 1xN incorporated TV signals. To cascade 2 or more units, connect the RF output of the preceding unit to the TV input (loop-through) of the next unit (see illustration).

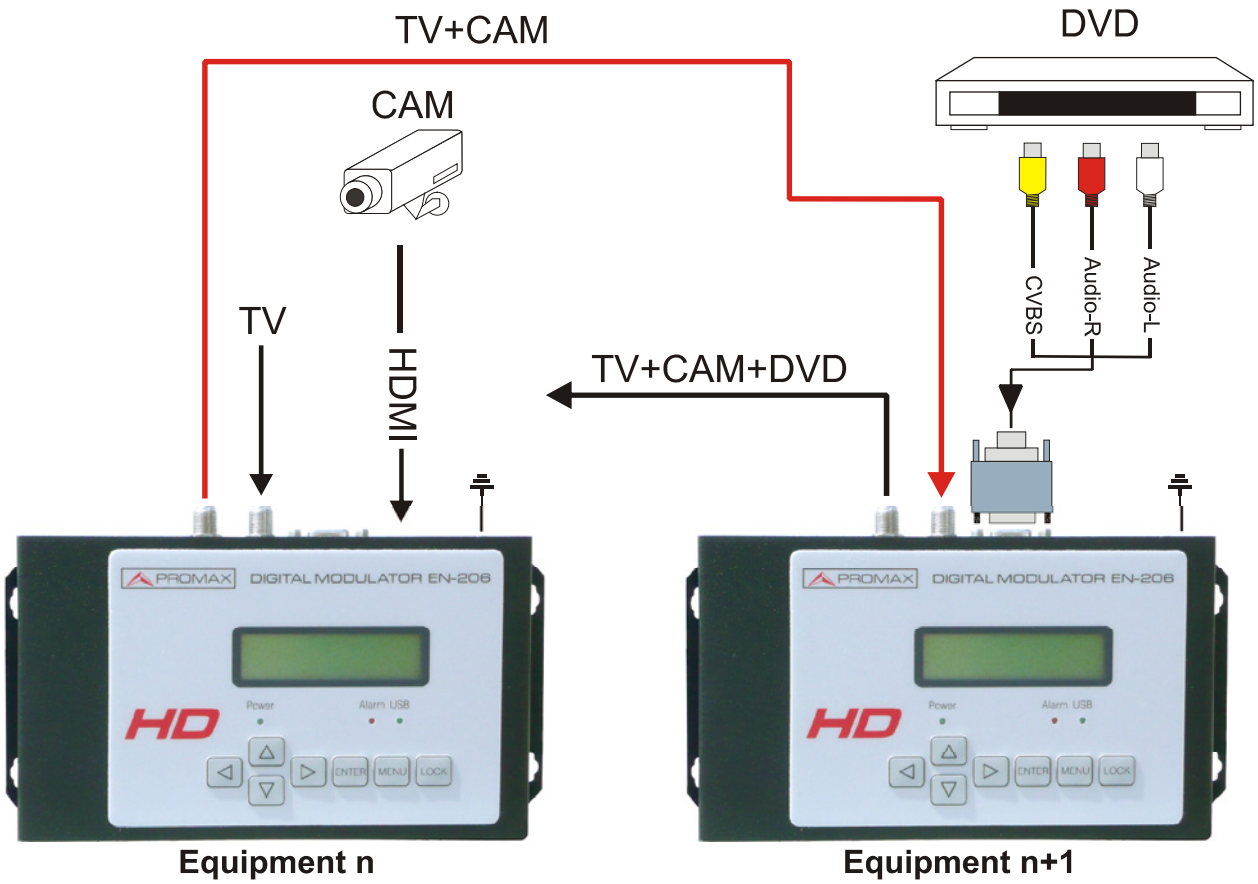


Figure 6.

2 OPERATIONS AND MANAGEMENT

The unit is controlled and managed through the keyboard and LCD display.

Figure 7.

► **LCD Display**:

It presents the selected menu and the parameter settings. The backlight in the display is on when the power is applied.

► **LED**:

These lights indicate the working status.

- **Power**: It lights on when the power supply is connected.
- **Alarm**: It lights on when the there is error, such as the signal source loss.
- **USB**: It lights on when the USB device is properly connected and blocks out when the USB device get removed.

► **Left / Right / Up / Down buttons**:

Use these buttons to turn the screen pages, shift the target items by moving the triangle, or change the parameter settings in the program mode.

► **Enter**

Use this button to enter a submenu or save a new setting after adjustment; press it to start adjusting the value of certain items when the corresponding underline flash with Up and Down buttons.

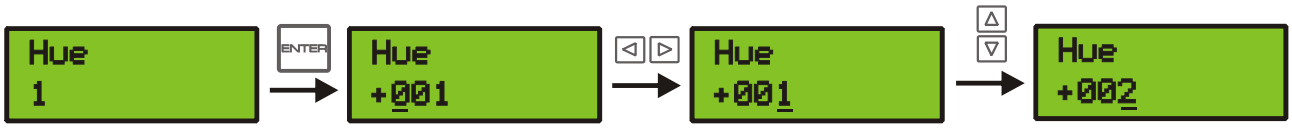


Figure 8.

Press it to activate the hidden selections and change the setting with Up and Down (or Left and Right) buttons.

Figure 9.

► **Menu**:

Press this button to step back.

► **Lock**:

Locking the screen / cancelling the lock state, and entering the main menu after the initialization of the device. After pressing **lock** key, the system will question the users to save present setting or not.

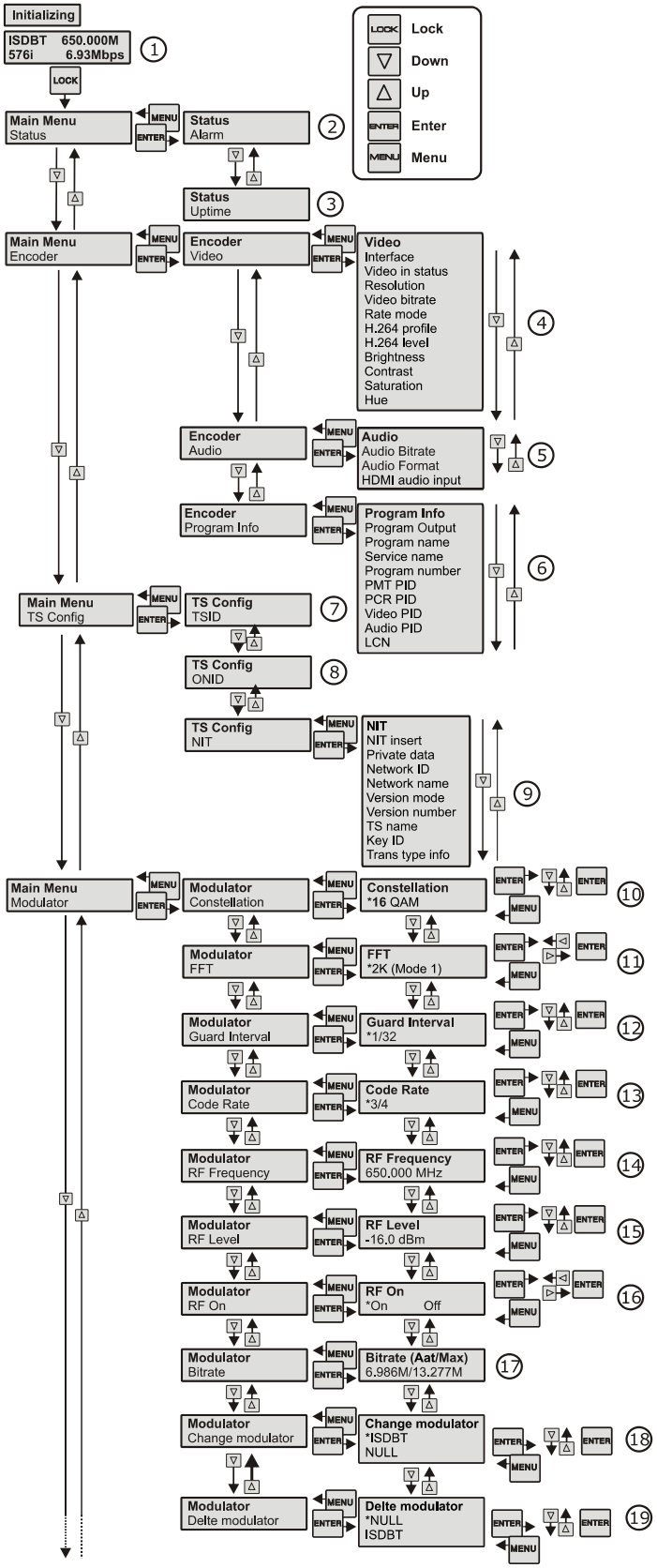
If not, the LCD will display the current configuration state.

After the initialization of the device, press LOCK to unlock the keyboard. Then you will be able to browse in the menu tree.

3 MENU TREE

When the power is connected, the LCD will start to initialize the program. After the initialization of the device, press LOCK to unlock the keyboard. Then you will be able to browse in the menu tree.

The LCD menu goes as below chart. Numbers on the menu refers to the numbers on the menu tree.


Initializing
ISDBT 650.000M
576i 6.93Mbps
1
LOCK
Lock
Down
Up
Enter
Menu
Main Menu
Status
Status
Alarm
2
Status
Uptime
3
Main Menu
Encoder
Encoder
Video
Video
Interface
Video in status
Resolution
Video bitrate
Rate mode
H.264 profile
H.264 level
Brightness
Contrast
Saturation
Hue
4
Encoder
Audio
Audio
Audio Bitrate
Audio Format
HDMI audio input
5
Encoder
Program Info
Program Info
Program Output
Program name
Service name
Program number
PMT PID
PCR PID
Video PID
Audio PID
LCN
6
Main Menu
TS Config
TS Config
TSID
7
TS Config
ONID
8
TS Config
NIT
NIT
NIT insert
Private data
Network ID
Network name
Version mode
Version number
TS name
Key ID
Trans type info
9
Main Menu
Modulator
Modulator
Constellation
Constellation
*16 QAM
10
Modulator
FFT
FFT
*2K (Mode 1)
11
Modulator
Guard Interval
Guard Interval
*1/32
12
Modulator
Code Rate
Code Rate
*3/4
13
Modulator
RF Frequency
RF Frequency
650.000 MHz
14
Modulator
RF Level
RF Level
-16.0 dBm
15
Modulator
RF On
RF On
*On Off
16
Modulator
Bitrate
Bitrate (Aat/Max)
6.986M/13.277M
17
Modulator
Change modulator
Change modulator
*ISDBT
NULL
18
Modulator
Delte modulator
Delte modulator
*NULL
ISDBT
19

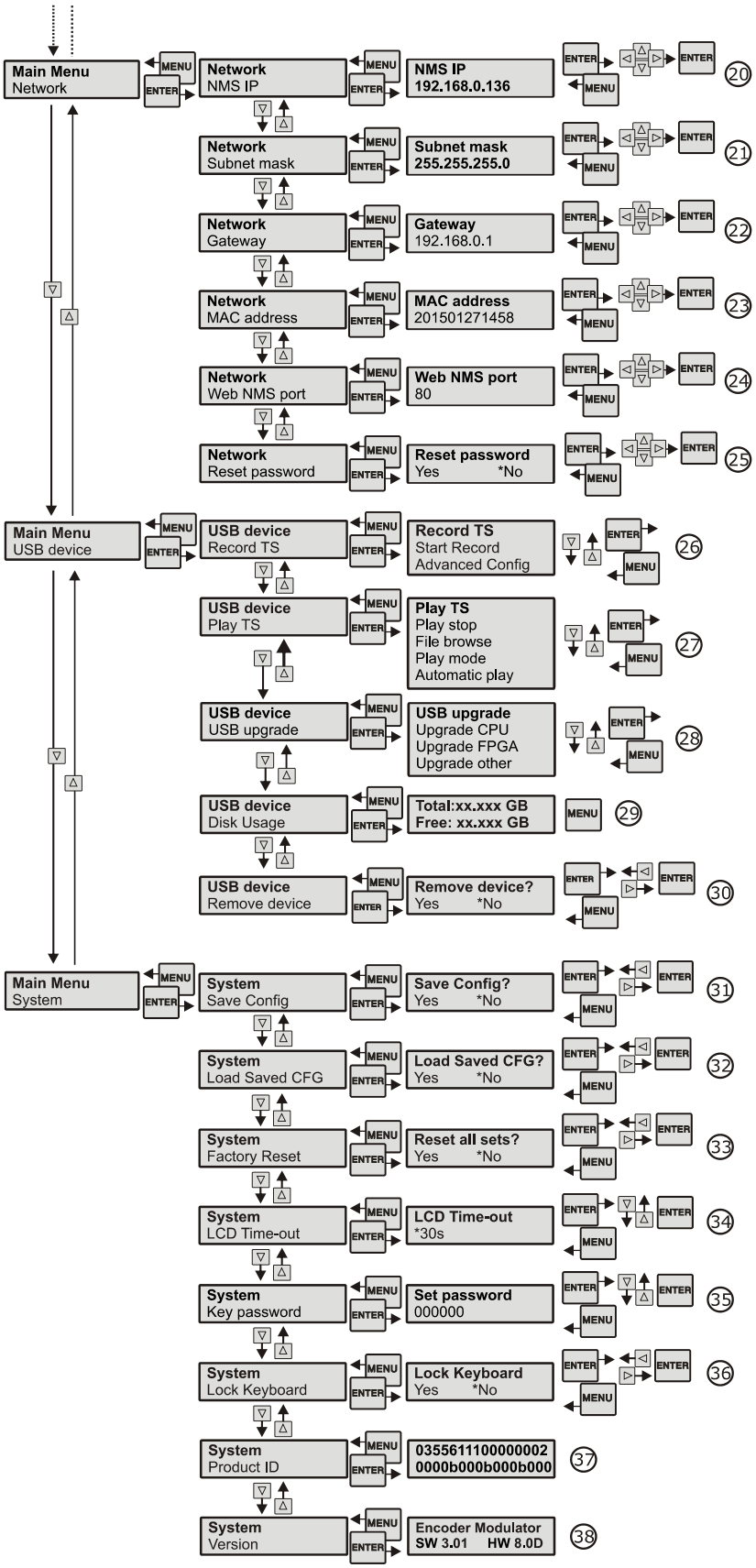


Figure 10. ISDB-T menu Tree.

1. ISDB-T:

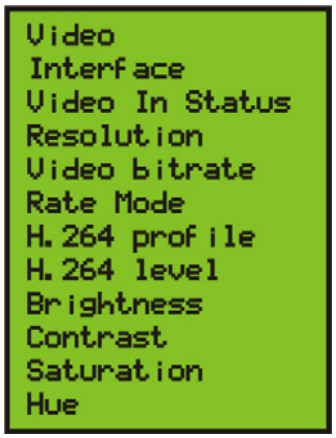
Modulating standard.
XX.XXX MHz: The current output frequency.
576i: Video resolution of signal source.
X.XX Mbps: The current encoding bit rate

2. Alarm Status:

It displays alarm messages. For example, if the CVBS cable disconnected, it will display Video 1 Not Lock under this menu.

3. Uptime:

It displays the working time duration of the device. It times upon power on.



4. Video:

User can enter the items respectively to set video parameters.

Interface: Select a right interface type from the options provided. The device then can automatically search the signal and starts to encode.

Resolution: Signal source resolution, read-only.

Video Bitrate: Adjust in range of 1.000~19.000 Mbps.

Rate Mode: This unit user can choose CBR or VBR.

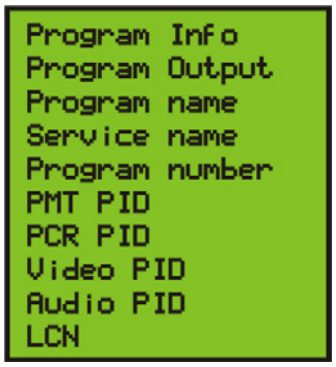
User can also adjust values of rest items (**H.264 profile**, **H.264 level**, **Brightness**: 0-128 & **Contrast**: 0-255 & **Saturation**: 0-128; **Hue**: -128 - +127).

5. Audio:

Audio Bitrate: Select audio bit rate from the options provided. Different audio format has different bit-rate range. See specification table for details.

Audio format: Seleccione el formato de audio entre MPEG2, MPEG2-AAC y MPEG4-AAC.

HDMI audio input (Entrada de audio HDMI): Choose to input HDMI audio or not.



6. Program Information:

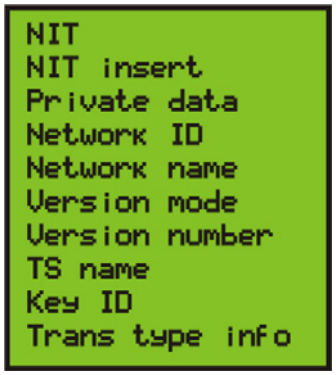
User can enable or disable the program output under menu **Program Output**. User can also enter the other items to edit the **Service Name**, **Program Name**, **Program Number**, and **PIDs of PMT**, **PCR**, **Video and Audio**, and **edit LCN** (Logical channel number).

7. TSID (Transport Stream ID):

User can view or adjust after enter this menu.

8. ONID (Original Network ID):

User can view or adjust after enter this menu.



9. NIT (Network Information Table):

NIT table is a very important table for describing the network and TS. User can enter the submenus displayed and edit the values or select the LCN (Logical channel number) mode, and choose whether to insert the NIT. If user chooses to insert the NIT information (Network ID, Network Name and other parameters) will be added to the transport stream.

NOTE: When the Private Data is set as 0*0, it is invalid.

10. Constellation:

ISDB-T/Tb modulator contains these constellation modes: DQPSK, QPSK, 16QAM and 64QAM.

11. FFT (Transmission Mode):

Select between 2K, 4K and 8K.

12. Guard Interval:

Select among 1/32, 1/16, 1/8 and 1/4.

13. Code rate:

It refers to FEC-Forward Error Correction rate. It contains 1/2, 2/3, 3/4, 5/6 and 7/8.

NOTE: The different combination of bandwidth, constellation, guard interval and code rate (FEC) will form a different output code rate.

14. RF Frequency:

Adjust it at range of 30 to 999 MHz. Set it according your regional situation or inquire your local services.

15. RF Level:

Adjust it at range of -16~ -36dBm.

16. RF On:

User can choose to turn on or turn off the RF under this menu.

17. Bitrate:

User can read the current modulating bit rate and the maximum bit rate

18. Change modulator: User can select the modulation standard at this menu in accordance with the TV standard used to receive the output RF. After selecting the Modulation standard, user needs to restart the device.

19. Delete modulator: User can choose to delete modulation mode(s) which you June never use from the device.

⚠ **CAUTION**: The deleted modulation mode(s) cannot be restored without the right upgrade software from the factory. In such case, ask the factory for help.

20. NMS IP:
To configure IP address here (by default 192.168.0.136).

21. Subnet Mask:
To configure subnet mask here (by default 255.255.255.0).

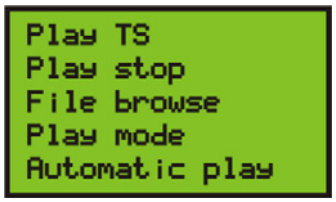
22. Gateway:
To configure gateway here (by default 192.168.0.1).

23. MAC Address:
To view MAC address here.

24. Web NMS Port (Web Port):
To configure web port here (by default 80).

25. Reset password:
It resets the password.

26. Please refer to chapter "USB port" for details.



27. Please refer to chapter "USB port" for details.

28. Please refer to chapter "USB port" for details.

29. Please refer to chapter "USB port" for details.

30. Please refer to chapter "USB port" for details.

31. Save Config:

Yes/No to save/give up the adjustment of setting.

32. Load Saved CFG:

Yes/No to load/ not to load the saved configuration.

33. Reset all sets:

Yes/No choose/not choose the factory's default configuration.

34. LCD Time out:

A time limit that LCD will light off. Choose among 5s, 10s, 45s, 60s, 90s and 120s (seconds).

35. Set password:

User can set a 6 digital password used to unlock the keyboard.

36. Lock Keyboard:

Choose Yes to set a password and lock the keyboard, then the keyboard will be locked and cannot be applicable. It is required to input the password to unlock the keyboard. This operation is one-off. (If forgetting your password, please use the universal code "000000".)

37. Product ID:

User can view the serial number of this device. It is read-only and unique.

38. Version:

It shows information of the device.
Encoder modulador: device name.
SW: software version number.
HW: hardware version number.

4 USB PORT

Using a USB flashdrive connected to the USB port it can perform several functions, which are described in the following sections.

4.1 TS Recorder and Save

4.1.1 Description

► **TS Recorder**:

EN-206 I can encode the source video to *.ts files and save them through the USB flash drive.

Connect the signal source to **EN-206 I** and start encoding process.

Start the record process and save the TS generated to the USB flash drive.

► **TS Playback**

Insert the **USB** flash drive with *.ts videos in **EN-206 I** and play back the content in an easy way.

A single video can be up to 2G in size and multi videos can be played on a loop.

► ***.ts Video Creation Software**

Users can also create *.ts videos containing pictures, videos and music with our *Creator* software on a PC and save them into the USB flash drive.

Drag the files to "Creator" application. Formats supported include:

Image: JPG, PNG, BMP, GIF.
Audio: MP3, WAV.
Video: WMV, MPG, MP4, TS, AVI.

Start the conversion process to generate *ts videos

For more details see chapter "TS Creator Software".

USB Flash Drive Specifications Required:

* **Standard:** High speed 2.0 / 3.0
* **File system:** FAT 32

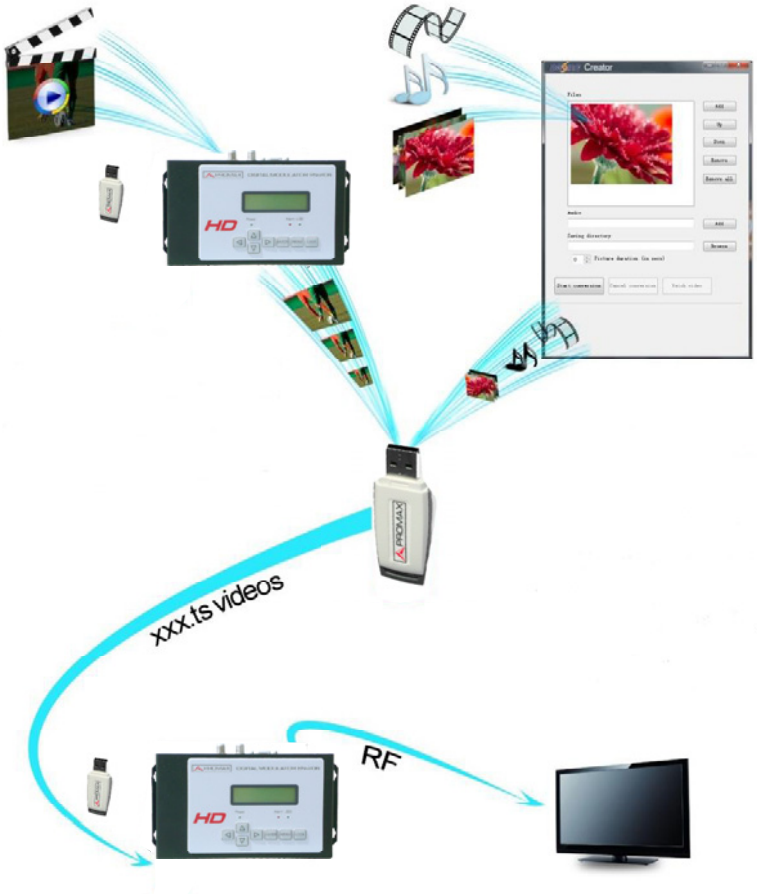


Figure 11.

4.1.2 Operation

Figure 12.

1. Connect the signal source, enter "**Start Record**" and choose "**Yes**" to start recording the encoded TS.

2. Advanced Config:

   ► **File size**:

   Users can set the file size for the *.ts to be recorder. A single file can be maximum 2000 MB in size.

   ► **Filter null PKT**:

   Users can decide whether to filter the null packet for the *.ts files to be recorded.

   ► **Filter save mode**:

   There are 3 modes provided:

   - "**Single file**": For example, when the file size is set as 1000 MB and the *.ts is recorded up to 1000 MB, it automatically stops recording TS.
   - "**Segmented file**": For example, when the file size is set as 1000 MB and the *.ts is recorded up to 1000 MB, it automatically saves the files and continues to record TS and save it to next file until the USB memory is full.
   - "**Loop record**": It automatically saves the files and continues to record TS and save it to next file. When the USB memory is full, it replaces the previous files.

   ► **File name**:

   Users can enter this menu to edit name for the *.ts files to be recorded. For example, if users name it "Record-", it will give name to the saved *.ts files "Record-001.ts", "Record-002.ts"... "Record-00N.ts"

   ► **Automatic Record**:

   Users can cose whether to record the TS automatically or manually.

4.2 TS Playback

Figure 13.

1 **Play stop:** Choose "**Yes**" to stop TS play. Choose "**No**" to start TS play.

2 **File browse**: There is a video list under this menu, choose one file and press "Enter" button to start play.

3 **Play mode**: User can select a play mode for the saved *.ts files as hended before playing the *.ts file.

When the *.ts is being playing, LCD will present a playing interface as shown below.

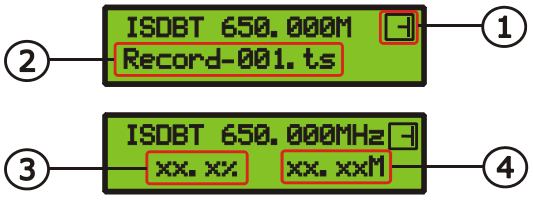


Figure 14.

1 Symbol of play-mode.

- Single loop
- Play all
- Loop all
- Single file

2 File name being playing.

3 The played percentage of the current file.

4 The size of the current file.

At this time, the key board also plays a different rule:

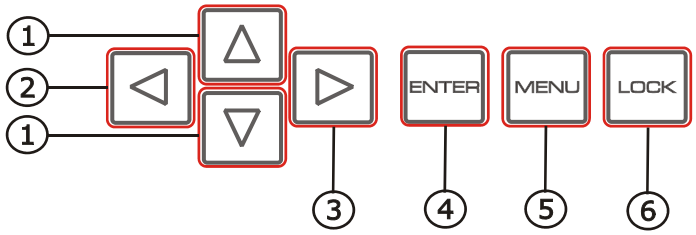


Figure 15.

1. Select file.
2. Rewind.
3. Forward.
4. Play/Pause.
5. Stop Playing.
6. Step back to main menu.

4 **Automatic play**: When the auto mode is enabled, the device will automatically play after USB connected. Otherwise user needs to click "Play stop" button to start.

4.3 USB upgrade

Figure 16.

Choose one item to be updated and press Enter to confirm. Keep the update file stored in the USB device in the name of "Encoder Modulator-XXX.tar.gz" (XXX = FPGA or CPU according to the component to be updated).

4.4 Disk Usage

Figure 17.

Users can enter this menu to view the USB total and free disk memory.

4.5 Remove Device

Figure 18.

Choose "**Yes**" to safely remove the **USB** disk. **EN-206 I** will then automatically resume encoding and playing the program input from the encoder module.

5 TS CREATOR SOFTWARE

EN-206 I encoder modulator has a function to create TS videos with the software associated with the product. Users can create *.ts files containing images, videos and audios in a simple and intuitive way, and play them on a television through **EN-206 I** usb port. Supported format files are:

Image: JPG, PNG, BMP, GIF
Video: MP4, WMV, AVI, MPG, TS, MKV
Audio: MP3, WAV

5.1 Installation

1. Access download are "Software and firmware" at the PROMAX website and select your equipment in the drop down menu. It will appear all the software for that equipment.
2. Download our "TS Creator" software package on your PC to get the installer and its auxiliary routine.
3. Occasionally, if your PC hasn't installed "Net frame 2.0" yet, double-click "NetFX20SP2_x86.exe" until complete the installation.
4. Double-click "Setup.exe" application to install the "TS Creator" and generate a desktop shortcut.

5.2 Operations of "TS Creator"

Double-click the "Creator" shortcut icon, it will trigger an operation interface like below:

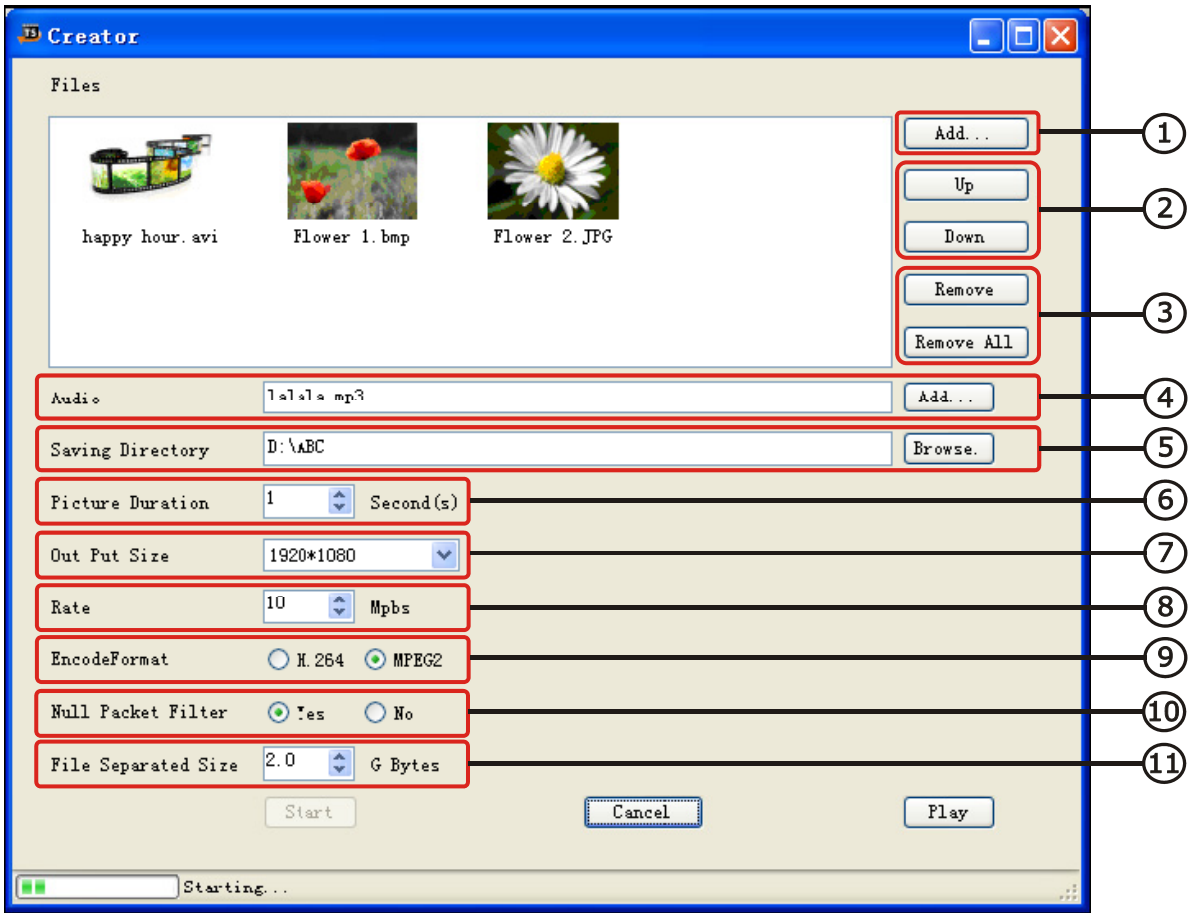


Figure 19.

1. Click to add images and videos.
2. Click to adjust the order of Images/Videos.
3. Click to delete the Images/Videos.
4. Click to add audios.
5. Click to set a save path for the TS video to be created.
6. To set time duration for every picture when playing the video.
7. To set the resolution for the output video.
8. The video is transformed based on VBR (Variable Bit Rate). The number set here represents the highest bit rate for the output video and bit rate will varies under the number.

9 Users can select a encode format here according to standard of receiving terminal.

10 Users can filter the null packet to boost the video's effect bit rate.

11 A single video can be maximum 2.0 GB in size. (EN-206 I cannot play a video bigger than 2 GB).

After setting all the parameters, click Start to start the transformation. Click "**OK**" when it prompts "**The operation completed normally**".

Cancel Click this button to stop the transformation **before** the operation completed.

Play After finishing the transform operation, users can clic this button to play the generated TS video.

5.3 File Management

After finishing the transformation, users can find out the videos files generated according the Saving Directory. For example, we save the video in "D:\ABC" so we can find it in Disk D\Folder ABC.

► **Management:**

1 Three files will be generated if the Null Packet has been filtered.

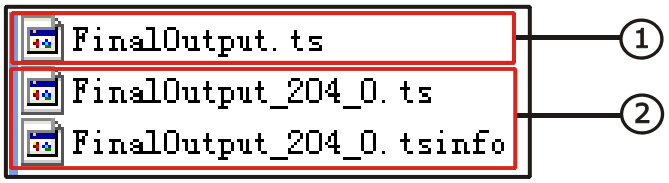


Figure 20.

A File TS video for preview through the "Creator" interface by clicking "Play" button.

B File TS video and information files: Users need to save the two files together in the USB memory, and then **EN-206 I** can read them and play the video.

2 Two files will be generated if the Null Packet has been filtered.

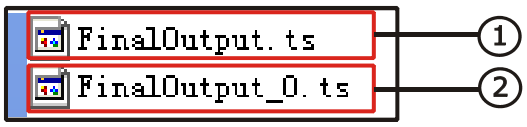


Figure 21.

A File TS video for preview through the "Creator" interface by clicking "Play" button.

B File TS video: Users need to save it in the USB memory, and then **EN-206 I** can read it and play the video.

► **Remarks:**

- All the file names are automatically generated.
- Rename the files before creating a new video to avoid covering the previous files.
- If you rename "FinalOutput-204-0.ts" or "FinalOutput-204-0.tsinfo", always sep the names the same (Extensión excluded) and then **EN-206 I** can read them and play the video.

6 WEB-SERVER OPERATION

In addition to using front buttons to control the encoder modulator and USB device, users can also perform the same operation in an easier way with the web Brower in the PC (Personal Computer).

6.1 Login

The default IP address of this device is 192.168.0.136. (We can modify the IP through the front panel.)

Connect the PC and the encoder modulator with a net cable, and use ping command to confirm they are on the same network segment.

I.G. the PC IP address is 192.168.99.252, we then change the device IP to 192.168.99.xxx (xxx can be 1 to 254 except 252 to avoid IP conflict).

Use web browser to connect the device with PC by inputting the device's IP address in the browser's address bar and press Enter.

It will display the Login interface. Input the Username and Password (Both the default Username and Password are "admin".) and then click "**LOGIN**" to start the device setting.

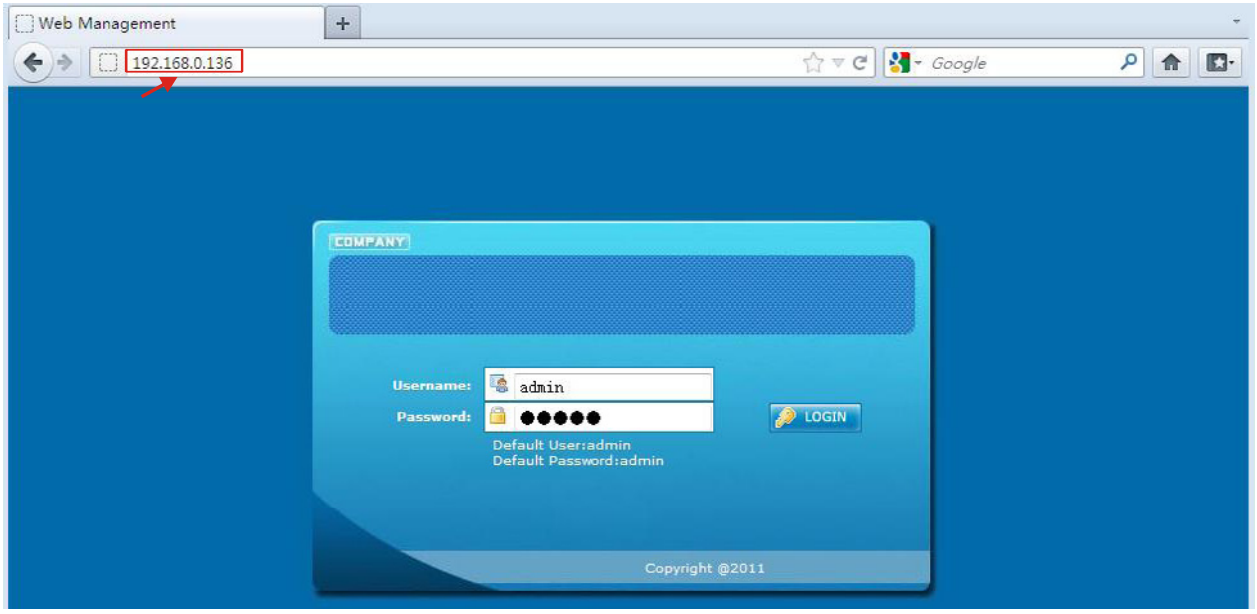


Figure 24.

6.2 Operation

When we confirm the login, it displays the WELCOME interface as figure below where users can have an overview of the device's system information and working status.

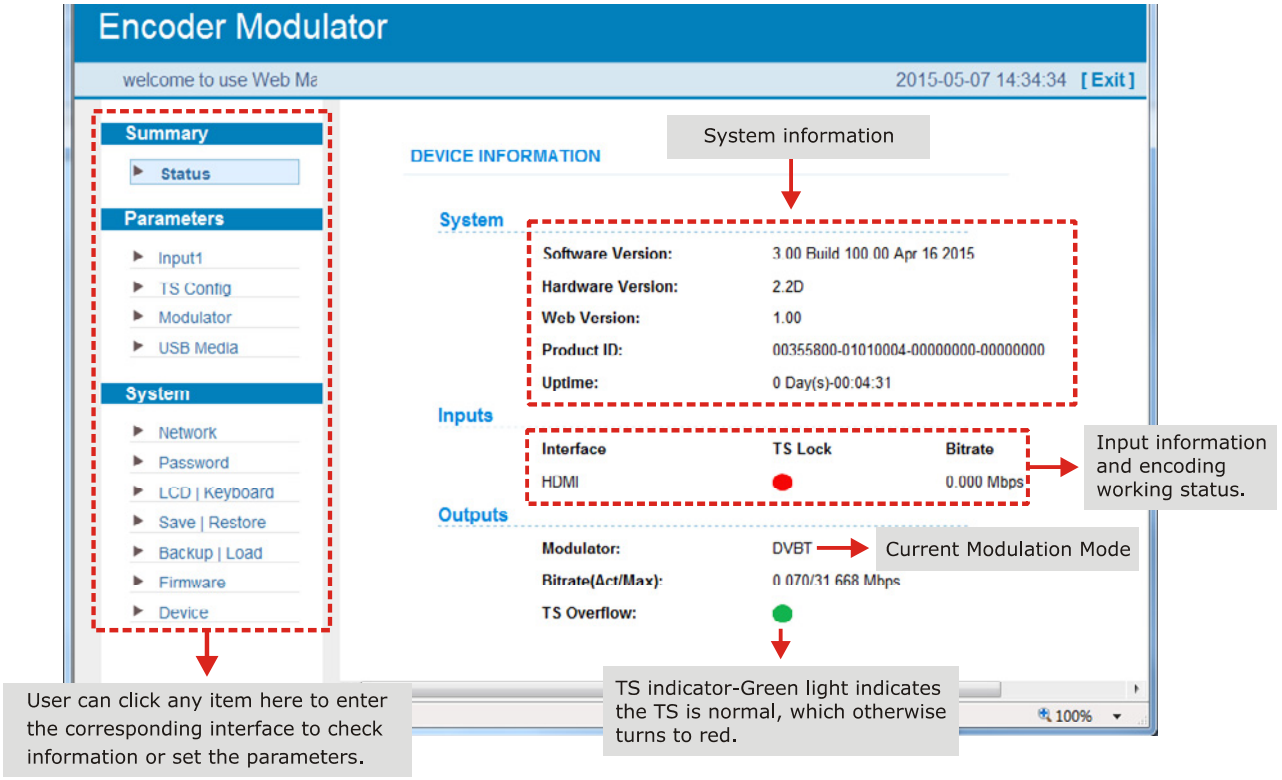


Figure 25.

Parameters – Input

From the menu on left side of the webpage, clicking "Input", it displays the interface where users can configure the encoding parameters for the input video/audio (see figure).

NOTE: Items in this interface varies when different modulation mode is chosen as the current mode. This user manual here takes **DVB-T modulation mode** as example to display.

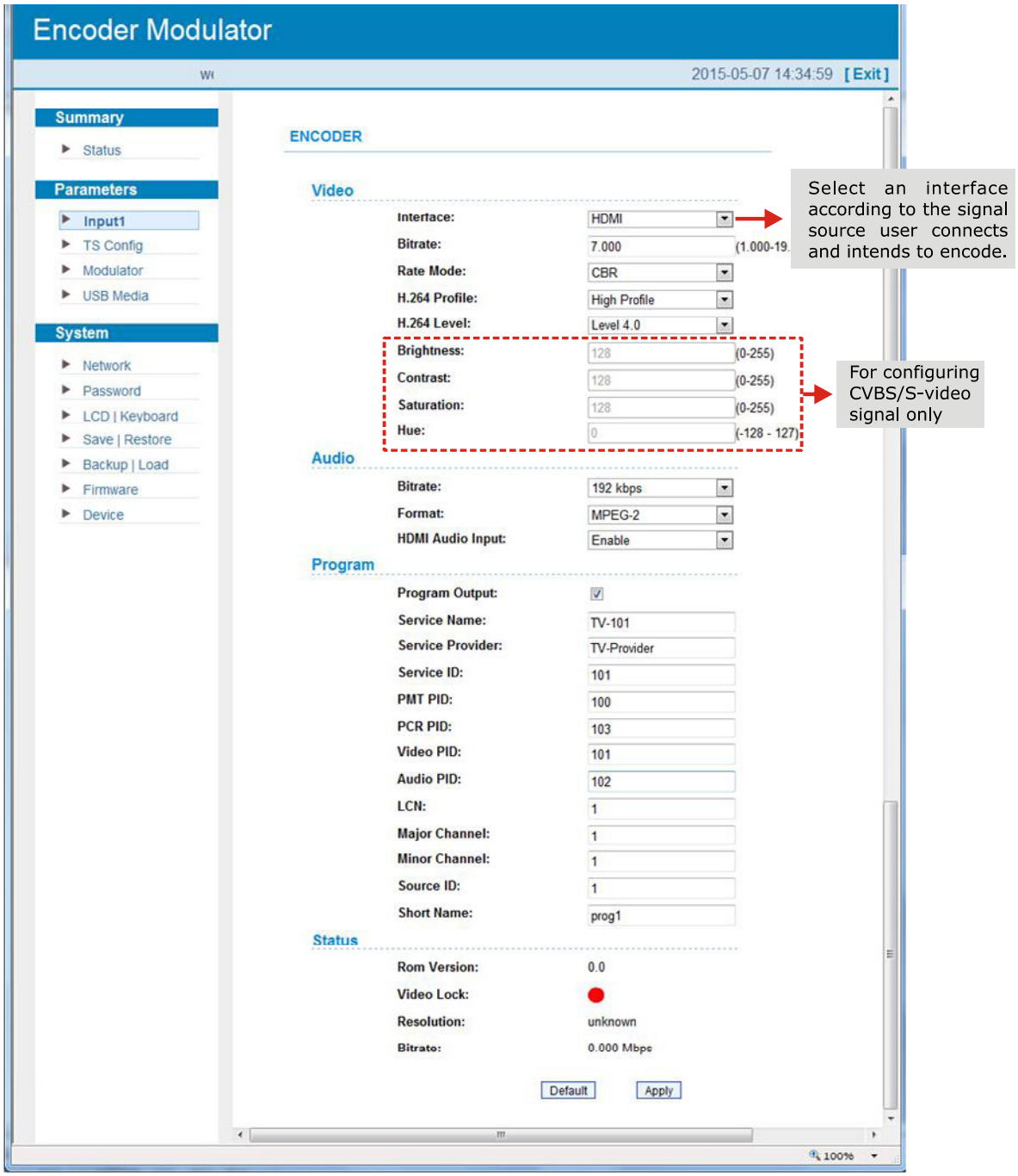


Figure 26.

Parameters – TS Config

From the menu on left side of the webpage, clicking “TS Config”, it displays the interface where users can configure the parameters for the transport stream as prompt (see figure).

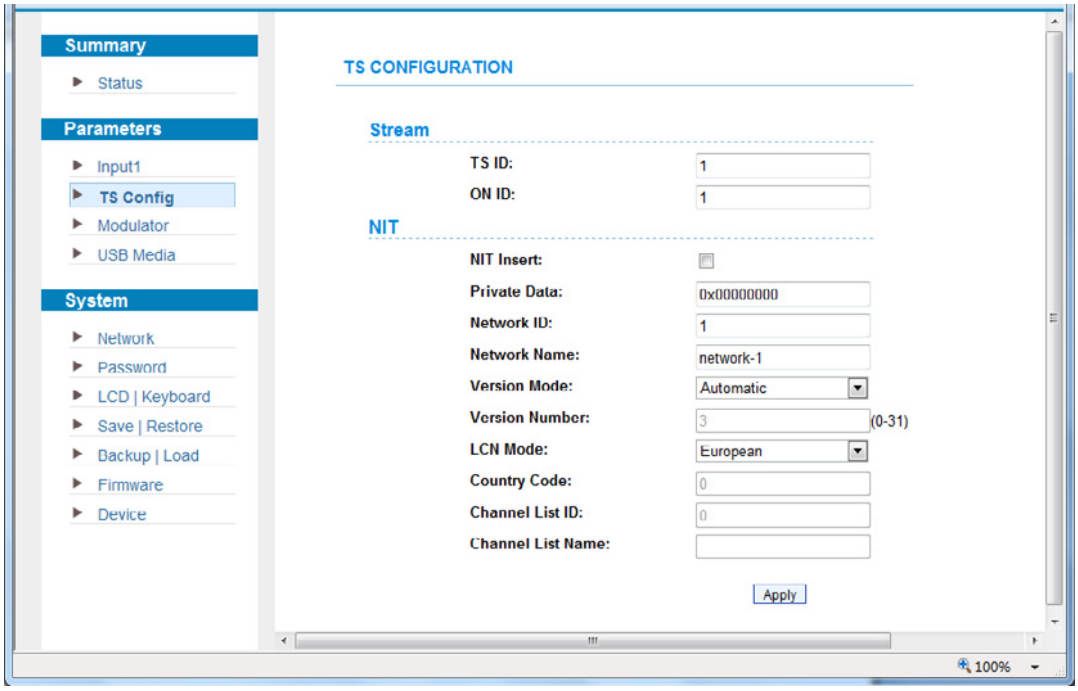


Figure 27.

Parameters – Modulator

From the menu on left side of the webpage, clicking "Modulator", it displays the interface where users can configure the modulating parameters for the RF output (see figure). User can select a different modulation standard at "System → Device" interface.

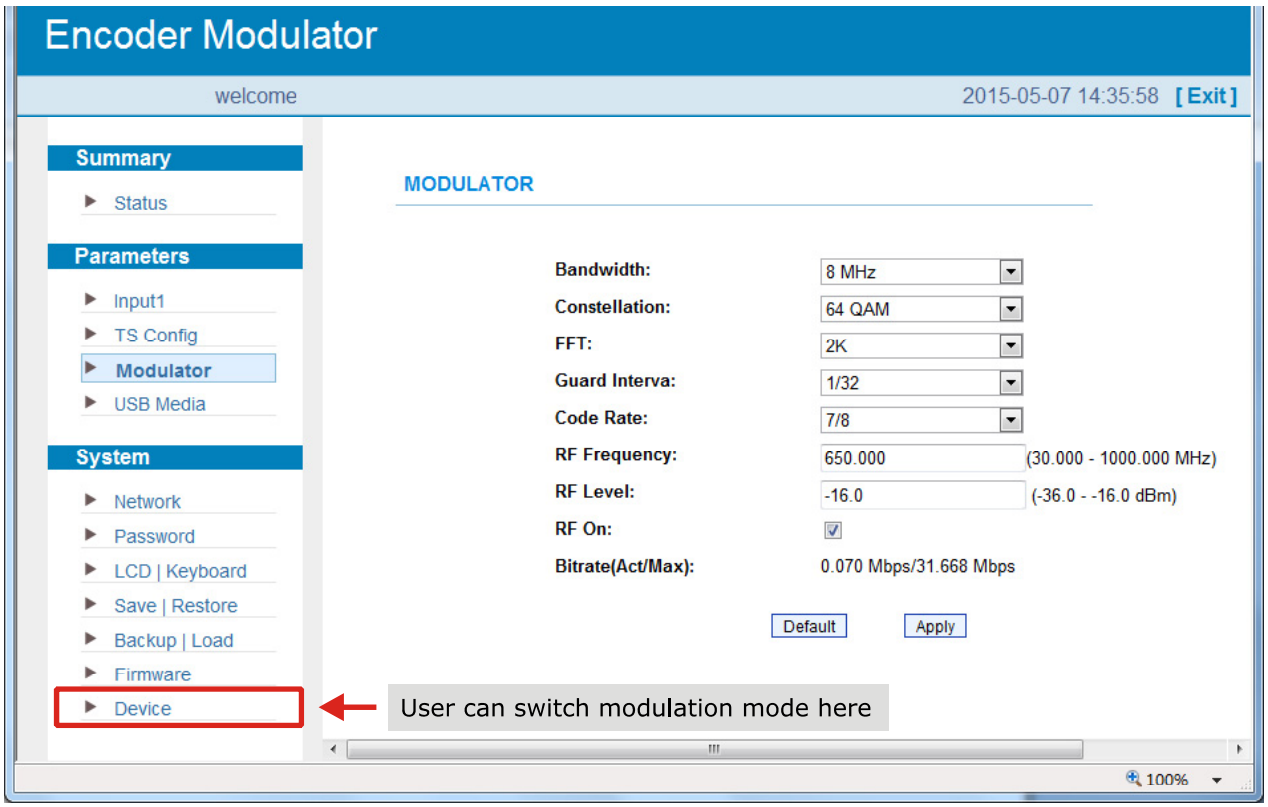


Figure 28.

Parameters – USB Media

From the menu on left side of the webpage, clicking "USB Media", it displays the interface where users can operate USB device (see figure).

NOTE: It is necessary to connect USB device and signal source and activate encoding to operate TS recording.

NOTE: It is necessary to connect USB device when operate TS playing.

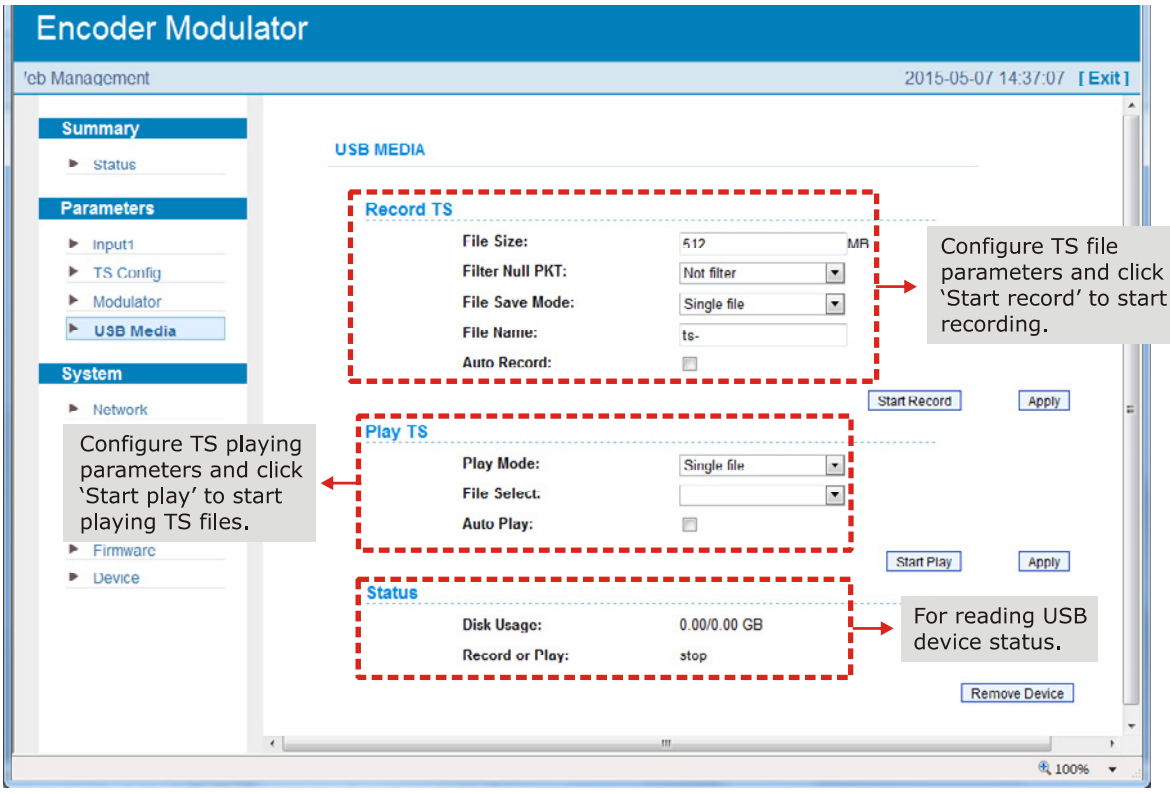


Figura 29.

► Record TS

File Save Mode

"**Single file**": For example, when the file size is set as 1000M and the *.ts is recorded up to 1000M, it automatically stops recording TS.

"**Segment file**": For example, when the file size is set as 1000M and the *.ts is recorded up to 1000M, it automatically saves the files and continues to record TS and save it to next file until the USB memory is full.

"**Loop record**": It automatically saves the files and continues to record TS and save it to next file. When the USB memory is full, it replaces the previous file.

- **File name**: Users can enter this menu to edit name for the *.ts files to be recorded. For example, if users name it "Record-", it will give name to the saved *.ts files "Record-001.ts", "Record-002.ts"… "Record-00N.ts".

- **File size:** users can set the file size for the *.ts to be recorded. A single file can be maximum 2047M in size.

► **Play TS**

- **Play mode**

  Mode 1: The ts files will be saved in 188-byte packages with null packet embedded.

  Mode 2: The ts files will be saved in 188-byte packages with null packet filtered. However, such ts files cannot be normally played with NDS3558, but can be played on PC with some media player such as VLC.);

  Mode 3: The ts files will be saved in 204-byte packages with null packet filtered.

► **File Select**

To browse TS files in the USB device.

► **Auto Record/Play:**

When the auto mode is enabled, the device will automatically record/play after USB connected. Otherwise user needs to click "Start record/Play" button to start.

System – Network

From the menu on left side of the webpage, clicking "Network", it displays the interface where users set the network configuration for the device (see figure).

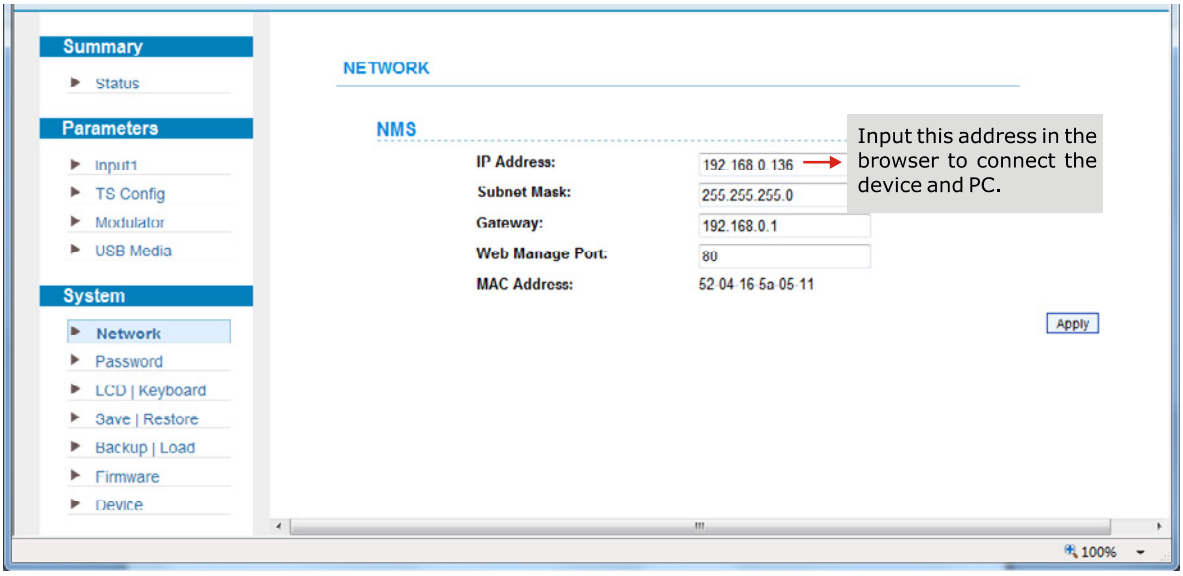


Figure 30.

Parameters – LCD / Keyboard

From the menu on left side of the webpage, clicking "LCD/Keyboard", it displays the interface where users can set the time out for the LCD (see figure).

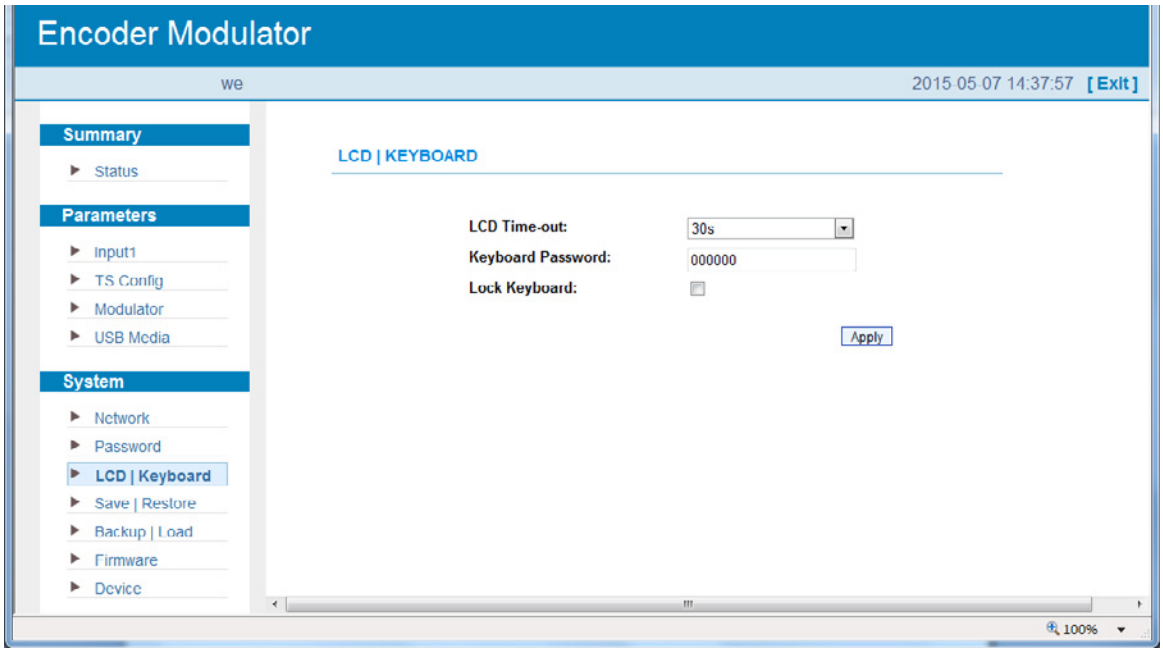


Figure 31.

System – Password

From the menu on left side of the webpage, clicking "Password", it will display the screen as Figure-9 where to set the login account and password for the web NMS (see figure).

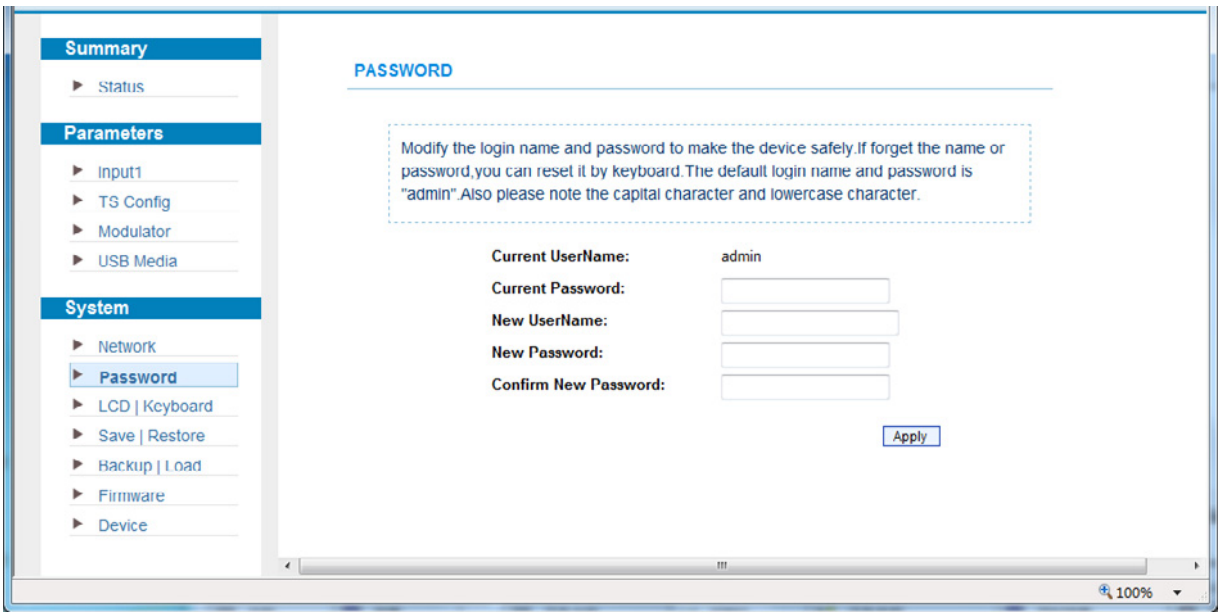


Figure 32.

System – Save / Restore

From the menu on left side of the webpage, clicking "Save/Restore", it will display the screen as figure below where to save or restore your configurations.

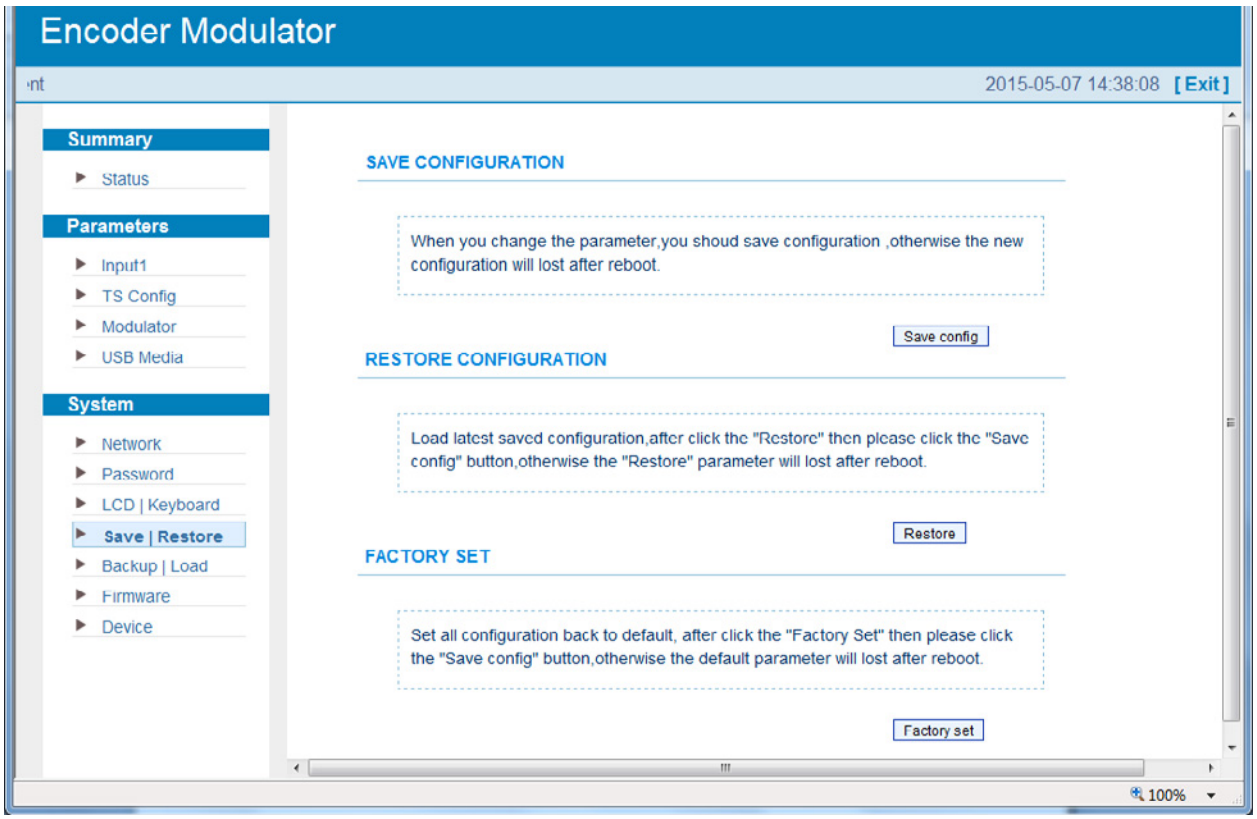


Figure 33.

System – Backup / Load

From the menu on left side of the webpage, clicking "Backup/Load", it will display the screen as figure below where to backup or load your configurations.

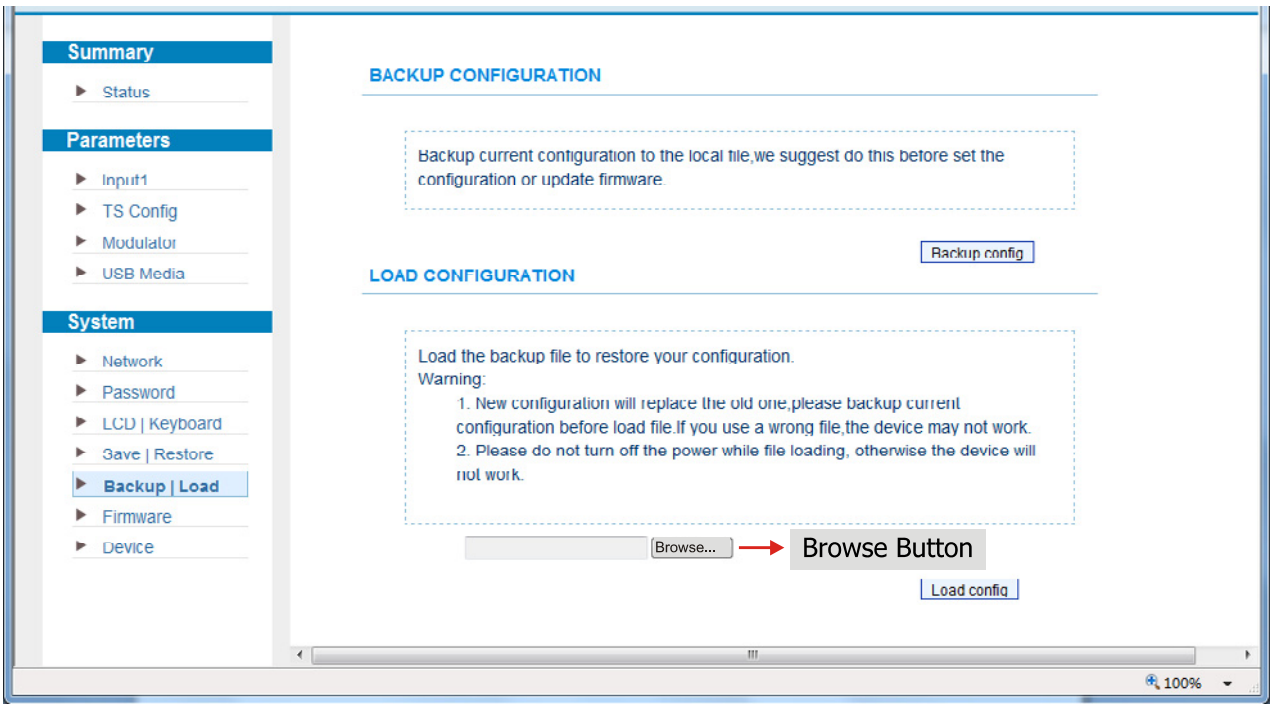


Figure 34.

System – Firmware:

Click "**Firmware**" from the menu it will display the screen as the figure. Here user can update the device by using the update file.

Click "**Browse**" to find the path of the device update file for this device then click "Update" to update the device.

After updating the device, user needs to restart the device.

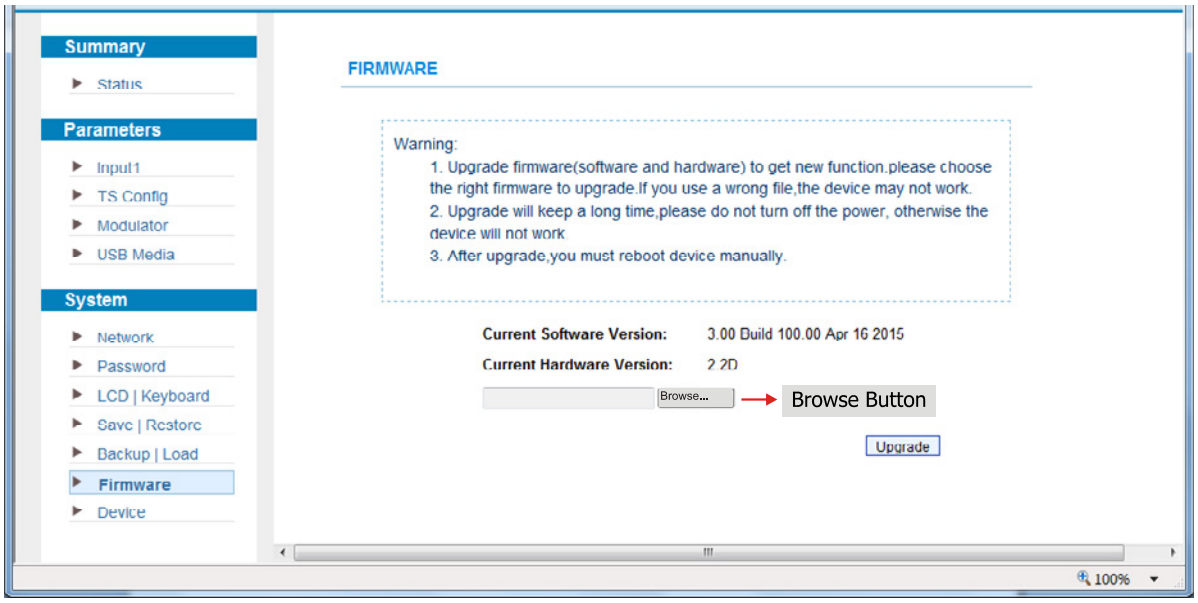


Figure 35.

System – Device

From the menu on left side of the webpage, clicking "Device", it will display the screen as the figure. The encoder modulator supports Modulation dynamic switching, which means several modulation standard can be in one device, but no more than three modulation standards is suggested. User can select modulation standard at this interface.

After selecting the Modulation standard, user needs to restart the device.

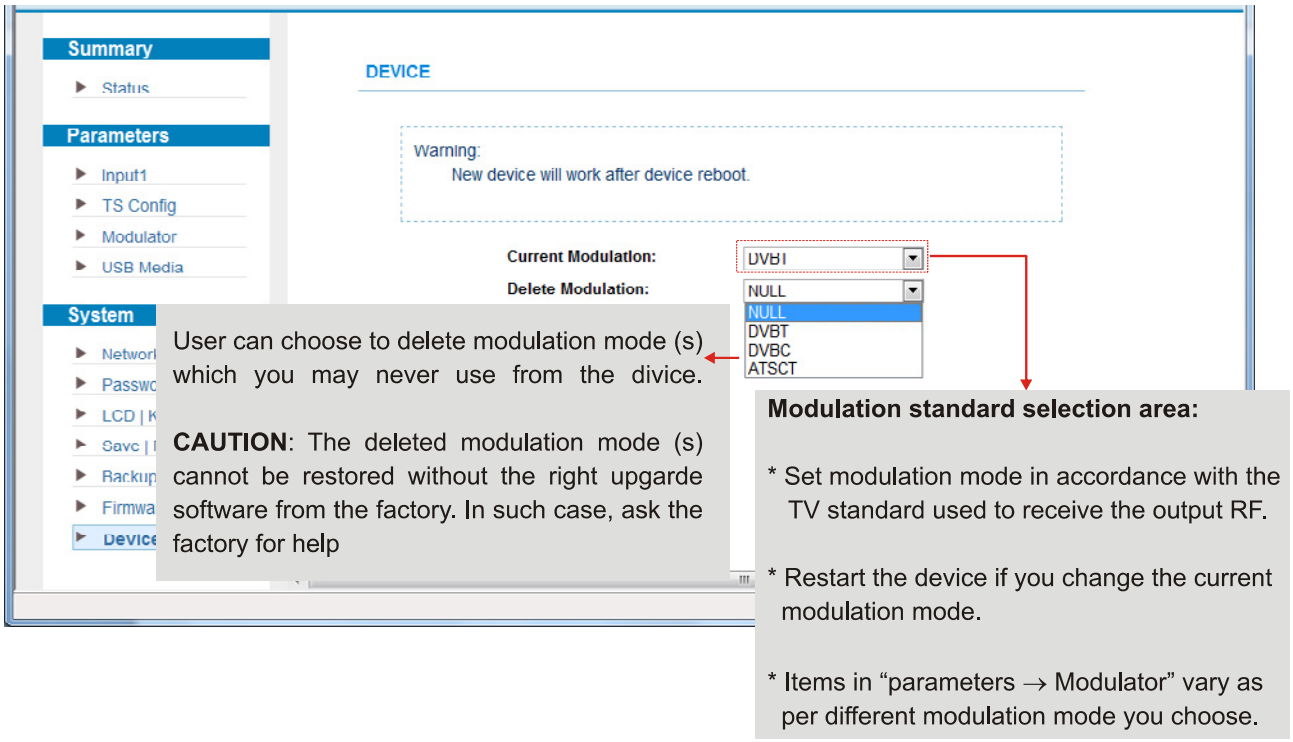


Figure 36.

7 SPECIFICATIONS

HDMI

VIDEO

Encoding	MPEG-4 AVC/H.264
H.264 Profile	High profile, main profile
H.264 Level	Level 3.0/3.1/ 3.2/ 4.0/4.1/4.2
Interface	HDMI
Resolution	1920 x 1080_60 p, 1920 x 1080_50 p; 1920 x 1080_60 i, 1920 x 1080_50 i; 1280 x 720_60 p,1280 x 720_50 p
Bit rate	1,000~19,500 Mbps

AUDIO

Encoding	MPEG1 Layer II, MPEG2-AAC, MPEG4-AAC
Sample rate	48 KHz
Bit rate	MPEG1 Layer II: 64, 96,128, 192, 256, 320, 384 kbps MPEG2-AAC: 128, 192, 256, 320, 384 kbps MPEG4-AAC: 64, 96,128, 192, 256 kbps

YPbPr/ CVBS/ S-Vídeo (using an adapter to VGA)

VIDEO

Encoding	MPEG-4 AVC/H.264
Interface	CVBS x 1, YPbPr x 1, S-Vídeo x 1
Resolution	
CVBS & S-Vídeo	720 x 576_50i (PAL); 720 x 480_60i (NTSC)
YPbPr	1920 x 1080_60i, 1920 x 1080_50i; 1280 x 720_60 p, 1280 x 720_50 p
Bit rate	1,000~19,500 Mbps

AUDIO

Encoding	MPEG1 Layer II, MPEG2-AAC, MPEG4-AAC
Interface	1 x Estéreo/2 x mono
Sample rate	48 kHz
Bit rate	MPEG1 Layer II: 64, 96,128, 192, 256, 320, 384kbps MPEG2-AAC: 128, 192, 256, 320, 384kbps MPEG4-AAC: 64, 96,128, 192, 256kbps

ISDB-T Modulation

Standard	ARID STD-B31
Bandwidth	6 MHz
Constellation	DQPSK, QPSK, 16QAM, 64QAM
Guard Interval	1/32, 1/16, 1/8, 1/4
Transmission Mode	2 K, 4 K, 8 K
MER	≥42 dB
RF frequency	30~1000 MHz, 1 kHz step
RF output level	-16 ~ -36 dBm (71~91 dbµV), 0.1dB step

System

Management	
Local control	LCD + control buttons
Remote control	web NMS
Language	English
LCN Insertion	Support
RF Combine in ATT	10 dB
Upgrade	USB/Web-server

General

Power supply	DC 12V
Dimensions	183 x 110 x 45 mm
Weight	< 1 kg
Operation temperature	0~45 ºC

INCLUDED ACCESSORIES

External DC power supply.

Quick Reference Guide.

RECOMMENDATIONS ABOUT THE PACKING

It is recommended to keep all the packing material in order to return the equipment, if necessary, to the Technical Service.

8 MAINTENANCE ⚠

8.1 Cleaning Recommendations

CAUTION

To clean the cover, make sure the instrument is disconnected.

CAUTION

Do not use scented hydrocarbons or chlorized solvents. Such products June damage the plastics used in the construction of the cover.

The cover should be cleaned by means of a light solution of detergent and water applied with a soft cloth.

Dry thoroughly before using the system again.

CAUTION

Do not use alcohol or its derivates for the cleaning of the front panel and particularly the viewfinders. These products can damage the mechanical properties of the materials and reduce their useful lifetime.

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